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So far as I have been able to observe, nothing unusual occurs in the early stages of development of the prothallia of any of the three species. The prothallia of *Aspidium tsussimense* and of *Lastrea chrysoloba* grow to a large size and are typically heart-shaped. The prothallia of *Pellaea adiantoidis* are much smaller and in some respects resemble those of *Pellaea atropurpurea*, in which species I described apogamy in 1910.<sup>1</sup> Antheridia are produced in large numbers on many of the prothallia of each of the three species here under consideration. The antherozoids are actively motile and appear to be normal in every respect. Archegonia have been observed on some of the prothallia of *Lastrea chrysoloba*.

On the well-developed cushion of the prothallium of *Aspidium tsussimense*, usually at some distance back of the apical notch, a number of papillate projections appear. These projections frequently occur in groups. Sometimes each consists of a single cell, but more frequently of a single row of cells. In this portion of the prothallium, usually after the projections have been formed, a compact mass of cells appears which develops into an embryo. At an early stage in the formation of this apogamous embryo, tracheids are produced. The developing embryo never produces a foot. The primary leaf as a rule is formed in advance of the primary root. The stem appears later than the leaf and the root. Even while the embryo is very young, numerous scales appear on the petiole of its primary leaf. These resemble the scales so characteristic of the mature sporophyte.

The prothallia of *Pellaea adiantoidis* also produce embryos apogamously. The development of the embryos appears to be similar to that described in my previous paper for that of *Pellaea atropurpurea*. In a number of cases in my cultures the embryo has already formed the primary leaf and the primary root.

When the embryo of *Lastrea chrysoloba* is about to form, a small light region appears between the apical notch and the cushion. In this region the embryo is developed. In all

of my cultures the apogamously produced embryo has just begun to project above the surface of the prothallium. Embryos developed from a fertilized egg have not been found. When prothallia-bearing archegonia are placed in a drop of water on a slide and examined microscopically, the archegonia can be observed to open, but antherozoids do not appear to be attracted to them.

While the prothallia of these species of ferns were being grown, numerous cultures of other species maintained under the same conditions of nutrition, light, temperature and moisture, contained prothallia bearing antheridia and archegonia, and in some cases embryos were produced upon these prothallia as a result of fertilization.

W. N. STEIL

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#### THE AMERICAN SOCIETY FOR PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS

THE sixth annual meeting of the Pharmacological Society was held in St. Louis at Washington University Medical School on December 27-30, 1914. There were five scientific sessions, three of them being joint meetings with the other members of the Federation of American Societies for Experimental Biology, the Physiological Society, the Biochemical Society and the Society for Experimental Pathology.

The following officers were elected in the Pharmacological Society for the year 1915:

*President:* Torald Sollmann.

*Secretary:* John Auer.

*Treasurer:* Wm. deB. MacNider.

*Additional members of the council:* Worth Hale and D. E. Jackson.

*Membership Committee:* S. J. Meltzer (term expires 1917).

*Election of New Members:* The following candidates were approved by the membership committee, passed by the council and elected by the society: Dr. F. C. Becht, University of Chicago; Dr. W. H. Brown, Rockefeller Institute; Dr. F. L. Gates, Rockefeller Institute.

The attendance was excellent, but the eastern section of the country was not as well represented as could be desired.

The scientific sessions were opened on Monday, December 28, at 9 A.M. by a joint meeting of the

<sup>1</sup> *Bot. Gaz.*, 42, 400-401, 1910.

four societies, Dr. Graham Lusk presiding. The following papers were read and discussed:

"Experimental Hyperthyroidism," by W. B. Cannon, C. A. Binger (by invitation) and R. Fitz (by invitation).

"Further Observations on the Etiology of Goiter in Fish" (read by title), by David Marine.

"Studies on Experimental Cretinism," by H. R. Basinger (by invitation) and A. L. Tatum.

"A Research into the Function of the Thyroid" (read by title), by G. W. Crile, F. W. Hitchings (by invitation) and J. B. Austin (by invitation).

"The Effect of Repeated Injections of Pituitrin on Milk Secretion" (read by title), by S. Simpson and R. L. Hill (by invitation).

"The Action of Pituitrin on the Mammary Gland," by W. L. Gaines (by invitation).

"On the Mechanism of Pituitrous Diuresis" (read by title), F. P. Knowlton and A. C. Silverman (by invitation).

"The Several Factors Involved in the Standardization of Pituitary Extracts," by George B. Roth.

The first scientific meeting of the Pharmacological Society took place in the afternoon at 2 P.M., Dr. Sollmann presiding. The following papers were read and discussed:

"The Fatal Dose of Various Substances on Intravenous Injection in the Guinea-pig," by S. Amberg and H. F. Helmholz.

"Experimental and Clinical Research into Alkaliescence, Acidity and Anesthesia" (read by title), by G. W. Crile.

"Effects of Chelidoniin on Surviving Organs," by P. J. Hanzlik.

"The Effect of Temperature on the Response of Frogs to Ouabain," by T. Sollmann, W. L. Mendenhall (by invitation) and J. L. Stingle (by invitation).

"Artificial Cerebral Circulation after Circulatory Isolation of the Mammalian Brain," by E. D. Brown.

"The Uterine Action of Quinidin, Cinchonin and Cinchonidin," by Worth Hale.

"Some Vasomotor Reactions in the Liver," by C. D. Edmunds.

"Distribution of Solutions in Cardiotomized Frogs with Destroyed or Inactive Lymph Hearts," by T. S. Githens and S. J. Meltzer.

"The Influence of Intra-intestinal Administration of Magnesium Sulphate upon the Production of Hyaline Casts in Dogs," by F. L. Gates (by invitation) and S. J. Meltzer.

The second scientific meeting was held on Tuesday morning at 9 o'clock, Dr. Sollmann in the chair. The following papers were presented and discussed:

"A Study of the Relative Importance of the Vascular Mechanism of the Kidney and of the Epithelial Element of the Kidney in Determining the Efficiency of Various Diuretics" (read by title), by W. deB. MacNider.

"Cross-tolerance of Drugs," by H. B. Myers (by invitation).

"Vascular Reactions in Poisoning from Diphtheria Toxin," by H. B. Myers (by invitation) and G. B. Wallace.

"The Action of Digitalis in Experimental Auricular Fibrillation," by A. D. Hirschfelder.

"The Effects of Drugs upon the Circulation in the Pia Mater and the Retinal Vessels," by A. D. Hirschfelder.

"The Action of Camphor on the Circulation," by Clyde Brooks and J. D. Heard (by invitation).

"The Effect of CO<sub>2</sub> upon the Convulsant Action of Acid Fuchsin in Frogs," by Don R. Joseph.

"The Mechanism of the Toxic Action of the Heavy Metals on the Isolated Heart," by Carl Voegtlin.

"An Analysis of the Action of Digitalin on the Cardiac Inhibitory Center and on the Cardiac Muscles," by C. W. Greene, L. R. Boutwell (by invitation) and J. O. Peeler (by invitation).

"A Comparative Study of the Influence of the Solvent upon the Toxicity of Thymol," by W. H. Schultz.

"The Reaction of Hookworm Larvæ to Certain Chemicals," by W. H. Schultz.

"A Further Observation on the T-wave when Digitalis is Given," by A. E. Cohn.

The next meeting in the afternoon was a joint scientific session of the societies forming the Federation and the following papers were read and discussed, Dr. Sollmann presiding:

"The Influence of Sodium Carbonate on the Glycosuria, Hyperglycæmia and the Respiratory Metabolism of Depancreatized Dogs" (read by title), by J. R. Murlin and B. Kramer (by invitation).

"The Influence of Depancreatization upon the State of Glycæmia after Intravenous Injections of Dextrose in Dogs," by I. S. Kleiner and S. J. Meltzer.

"The Possibility that some of the Hepatic Glycogen May Become Converted into Other Substances than Dextrose," by J. J. R. Macleod.

"Narcotics in Phlorhizin Diabetes," by R. T. Woodyatt.

"Adrenal Deficiency," by R. S. Hoskins.

"Hypoglycemia," by H. McGuigan.

"Some Effects of Adrenalin when Injected into the Respiratory Tract," by J. Auer and F. L. Gates (by invitation).

"The Relation of the Adrenals to the Brain" (read by title), by G. W. Crile, F. W. Hitchings (by invitation) and J. B. Austin (by invitation).

"Further Observations of the Origin of Hydrochloric Acid in the Stomach" (read by title), by A. B. Macallum and J. B. Collip (by invitation).

"The Effect of Various Fluids and Cereals on Gastric Secretion" (read by title), by C. C. Fowler (by invitation), M. E. Rehfus (by invitation) and P. B. Hawk.

"The Distribution of Gastrin in the Body," by R. W. Keeton (by invitation) and F. C. Koch.

"The Relation of the Digestion Contractions to the Hunger Contractions of the Stomach (Dog, Man)," by F. F. Rogers and L. L. Hardt (by invitation).

The third joint session was held on Wednesday morning, December 30, Dr. Lusk presiding. The following papers and demonstrations were presented:

"Recuperation: Nitrogen Metabolism of a Man when Ingesting Successively a Non-protein and a Normal Diet after a Seven-day Fast," by F. D. Zeman (by invitation), J. Kohn (by invitation) and P. E. Howe.

"Some Studies in Autolysis," by H. C. Bradley.

"The Diastase of the Blood," by H. McGuigan and C. L. v. Hess (by invitation).

"The Rate of Oxidation of Enzymes and their Corresponding Proenzymes," by W. E. Burge.

"The Harmful Effect of an Exclusive Vegetable Diet," by C. Voegtlin.

"The Effect of Long-continued Feeding of Saponin from the Bark of *Guaiacum officinale*" (read by title), by C. L. Alsberg and C. S. Smith (by invitation).

"Fat Infiltration of the Liver and Kidney Induced by Diet," by E. L. Opie and L. B. Alford (by invitation).

"On the Nature of the Hepatic Fatty Infiltration in Late Pregnancy and Early Lactation," by V. H. Mottram (by invitation).

"The Synthesis of Hippuric Acid in Experimental Tartrate Nephritis in Rabbit," by F. B. Kingsbury (by invitation) and E. T. Bell (by invitation).

### Demonstrations

Blood Pressure Method, by C. Brooks and A. B. Luckhardt.

Demonstration of a Point-to-point Method for Analyzing Induction Shocks by means of the String Galvanometer, by J. Erlanger and W. E. Garrey.

A Device for Projecting a Small Spot of Light Suitable for Exploring Photo-sensitive Areas, by B. M. Potter (by invitation).

Demonstration of the Effect of Sodium-iodoxybenzoate on Inflammation caused by Mustard Oil, by S. Amberg and D. McClure (by invitation).

An Arrangement of the Porter Clock to Give Three Time Intervals at the Same Time, by Worth Hale.

A Portable Respiratory Machine Furnishing Continuous, Intermittent and Remittent Streams of Air, by F. L. Gates (by invitation).

The Determination of Blood Sugar, by P. A. Shaffer.

On Wednesday afternoon the local committee arranged a series of enjoyable visits to the St. Louis hospitals and laboratories and also to the beautifully located, impressive buildings of Washington University.

*Dinners and Smokers.*—This part of the program was inaugurated by a dinner given by the local committee on Sunday evening, December 27, to the officers and councils of the constituent societies of the federation and of the Anatomists.

The customary and universally satisfactory informal subscription dinners and smokers were held on the evenings of December 28, 29 and 30; the first two at the Hotel Jefferson and the last one at the Hotel Warwick. Perhaps the most enjoyable of these was the first on December 28, when a number of excellent speeches were delivered, the speakers being the guests of the evening, Mr. R. S. Brookings, Dr. Graham Lusk, Dr. J. George Adami and Dr. G. Carl Huber.

At the last executive session of the Pharmacological Society a motion was put and passed unanimously to thank the authorities of Washington University for their hospitality and the local committee for its broad and efficient efforts to render the stay of their guests in St. Louis as pleasant and profitable as possible.

The next meeting of the federation will be held in 1915 in Boston at the Harvard Medical School.

JOHN AUER,  
Secretary

ROCKEFELLER INSTITUTE